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ABSTRACT

This research tested the proposition that self-concept is unidimensional. Joreskog's Unrestricted Maximum Likelihood Factor Analysis applied to 402 fifth-graders' responses to the Sears Self-Concept Inventory, indicated a twelve factor pattern adequately accounted for variance. Restricted Maximum Likelihood Factor Analysis was than applied to examine structure of factors. A factor pattern corresponding to twelve of the thirteen inventory subscales provided appropriate fit. Interpretation of multidimensional self-concept construct containing twelve dimensions aligned with inventory structure is consistent with data. Interpretation of unidimensional self-concept construct is inconsistent with data. (Author/BW)

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Self Concept: An Examination of Structure

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Introduction

Many educational programs now identify enhancement of self-concept as a primary objective (Landry, Schilson and Pardew, 1974; DeAnda, 1973). Some programs aim at increased self-awareness and self-actualization, while others focus on the the hypothesized link of students' self-concepts to their academic achievement and the feedback received in school. Hundreds of research investigations have measured self-concept in the school setting within the last fifteen years, reflecting the importance attached to the construct of self-concept in the educational process.

However, problems of measurement and definition of the self-concept construct have hampered the research as well as educational program development and evaluation. Though numerous self-concept measures are in use, the underlying dimensionality of most instruments has not been investigated. Some treat self-concept as unidimensional, while others treat it as a multidimensional

[1]The contribution of Dr. David E. Wiley to this research is gratefully acknowledged.

construct.

In some analyses of self report self concept inventory data, a unidimensional self concept construct has been assumed. One example is Pauline Sears' analysis (1963) of the results of the principal component analysis with varimax rotation (Kaiser, 1958) applied to responses of 195 fifth grade students to her Self Concept Inventory (SCI). Sears interpreted that the analysis indicated a single factor was adequate for explaining the variance in the data; she concluded that the inventory measured a unitary dimension of self concept (1963, p. 81).

While self concept has been treated as a unidimensional construct, this proposition may be inaccurate. If self concept is a multidimensional construct composed of separate but related dimensions which operate with some independence, attempts to combine the dimensions into a general dimension may obliterate crucial information. The objectives of the present research are: (1) to reexamine the structure of the SCI data, and (2) to determine whether a unidimensional or a multidimensional construct interpretation is most consistent with the data.

Theoretical Framework

Theories of the nature and development of self concept have included the proposition that the person's concept of himself is influenced by his evaluations of himself and the evaluations his attributes and performance have received in his own environment (Erikson, 1959; Kelley, 1971; Staats, 1974; White, 1960). If self concept is a unidimensional construct, then any evaluation a person receives or attributes to himself may affect his general self concept. A strong positive self evaluation in science and a strong negative self evaluation in basketball would be combined, cancelling each other and producing a moderate general self concept.

Alternatively, a multidimensional self concept construct would contain distinct areas in which a person can perform, assess himself and be assessed by others. Evaluations of the student's athletic performance have causal effect on his concept of his physical abilities and only associative effect on his concept of his ability to perform in science. The person who performs well in basketball may learn to see himself as a competent athlete; he may perform poorly in science and learn to see himself as an incompetent scientist. But good performance in basketball will not have a direct causal impact on his concept of himself in the area of science. This position is based on the proposition that the self concept construct is composed of distinct dimensions. The present research investigated whether the unidimensional or multidimensional construct interpretation is most compatible with the self report self concept data.

Methodology

The Sears Self Concept Inventory (Sears, 1963)--SCI--was administered to measure self reported self concept. SCI was developed to assess the individual's report of his self evaluations. This assessment has been used in research investigating relationships between self evaluations and evaluations of the individual made by significant others (Sears, 1963; Torshen, 1969). The ten areas of self concept assessed in the SCI are: physical ability, attractiveness of appearance, social relations with boys, social relations with girls, social relations with teachers, intellectual ability, work habits, relationships with others in general, general perception of self and performance in specified school subjects. Ten items are included for each of the ten areas. The person responds to each of the 100 item statements in the 1963 version of the SCI by evaluating himself

in three different ways. First, he answers the question: Do I like the way I do this? (Yes/No). Second, he answers the question: Do I think I may make some improvement before the end of the school year? (I think I may make some improvement/ I probably won't make any change). Third, he answers the question: Compared with others in my class, how do I rate new? (Very Good/Better than a good many/Better than average/Fair/Not Very Good). Thus, the respondent make three ratings for each of 100 items, a total of 300 responses.

Data Sources

Two distinct samples of Caucasian fifth Grade students (N=95; N=402) selected from lower, middle and upper socioeconomic classes (Hollingshead, 1957) responded to the SCI.

Data Analysis and Results[2]

Analysis of the SCI data was conducted in two stages. The first stage of the analysis (N=95) identified the major components of the data structure and explored whether these components corresponded to the a priori structure of the SCI or whether other components were more important than the a priori structure.

First, a component analysis was conducted to determine if clusters of variables were sufficiently homogeneous to permit them to be reduced to single composite measures. This analysis was undertaken because the Joreskog factor analysis program available at the time would not receive 300 variables.

The 300 items of the SCI were placed in 30 groups of 10 items each making a separate group for each rating in each area. This grouping procedure produced 30 variables, each composed of responses to 10 items. Principal

[2]For a more extensive description of this analysis, refer to Torshen, 1969

component analysis was used to calculate the component score for each of the 30 variables. 30 component analyses were conducted, and 30 components were extracted (see Table I). The component analyses indicated that each of the 30 variables was sufficiently homogeneous that a single variable score could be extracted. This conclusion was supported by the following facts: 1) in each of the 30 analyses, the first component accounted for a large portion of the variance; and 2) the component weights for the first component were "fairly" equal.

Next, Unrestricted Maximum Likelihood Factor Analysis (Joreskog, 1967) was applied to the 30 component scores in order to investigate how many variables were needed to account for the variance of the SCI data and the structure of those variables. This analysis indicated that a model of fourteen factors provided an adequate fit for the data. Twelve of the fourteen factors were interpretable as twelve of the thirteen aspects of the a priori structure of the SCI. The first rating variable, the rating involving satisfaction with self, was not isolated as a factor because it was linearly dependent on the twelve factors which were interpreted.

Then, Restricted Maximum Likelihood Factor Analysis (Joreskog, 1969) was applied to these data to test the hypothesis that a model of twelve factors having the structure of the twelve a priori aspects of the SCI provides an appropriate fit for the data. The factor pattern of the twelve a priori aspects was specified. This analysis confirmed the hypothesis. Since the hypothesis tested was generated by the Unrestricted Maximum Likelihood FAcotr Analysis, a confirmatory analysis was conducted by applying Restrictive Maximum Likelihood Factor Analysis to the self concept data produced by a second sample of 402 subjects.

In the second stage of the analysis, Restricted Maximum Likelihood Factor Analysis was applied to SCI responses produced by the second sample of subjects (N=402) to test the hypothesis that the 12 factor pattern provides an appropriate fit for the SCI data. The factor pattern corresponding to a priori structure of the subscales was specified. The results confirmed the hypothesis. The proposition that the self concept data produced by the SCI can be grouped into twelve factors corresponding to twelve subscales of the inventory was confirmed.

Correlations among the twelve factors ranged from .004 to .63. The magnitude of these correlations indicates that the factors represent distinct but related aspects of self reported self concept. An orthogonal rotation to obtain uncorrelated factors was not performed because the resulting factors would have been less meaningful within the existing framework of the SCI. The twelve factors accounted for 77% of the variance. The distinct portion of the variance accounted for by each factor cannot be determined because the factors are correlated.

Scientific and Educational Implications

The conclusion that self construct is a multidimensional construct, containing distinct areas in which a person can perceive and assess himself and perform and be evaluated by others, was supported by the present research. Some of the confusion plaguing the area of self concept measurement may result from failure to identify and distinguish between the underlying dimensions in the assessment of self concept. This failure to treat the dimensions separately can obliterate crucial information and reduce the meaningfulness of the resulting self concept scores. Results of two or more self concept measures are difficult to compare when we do not know whether they are measuring the same or different self concept dimensions.

If we are to build a body of knowledge about self concept, the underlying dimensions of self concept assessment procedures must be identified so that the results obtained by various measures can be compared. Furthermore, research attempting to identify educational variables which promote or endanger healthy self concept development should differentiate the various self concept dimensions and investigate the specific educational variables most likely to affect specific self concept dimensions.

Table I

Thirty Principal Component Analyses of Ten Variables Each, of Which Only The First Principal Component is Represented

	Athletics	Learning	Boys	Girls	Appearance	Teacher	Work Habits	Others	Self	School Work
Satisfaction	.238	.728	.738	.720	.672	.536	.646	.241	.537	.632
	.729	.352	.115	.426	.364	.432	.531	.441	.611	.392
	.767	.514	.659	.822	.687	.592	.523	.649	.555	.141
	.724	.751	.586	.577	.175	.592	.635	.660	.227	.452
	.810	.250	.791	.836	.336	.483	.723	.605	.234	.732
	.767	.752	.649	.808	.717	.734	.666	.532	.558	.626
	.552	.500	.758	.715	.712	.777	.590	.374	.366	.574
	.438	.642	.655	.832	.344	.650	.469	.687	.719	.561
	.796	.388	.584	.779	.573	.789	.349	.640	.021	.455
	.275	.699	.533	.727	.514	.646	.208	.444	.457	.526
Improvement	.363	.600	.566	.679	.456	.483	.510	.261	.317	.415
	.533	.684	.326	.367	.353	.472	.573	.522	.540	.417
	.525	.711	.703	.816	.575	.488	.412	.715	.568	.182
	.517	.710	.569	.564	.372	.778	.576	.612	.571	.573
	.690	.399	.645	.737	.446	.565	.527	.497	.215	.507
	.661	.692	.734	.775	.697	.605	.601	.476	.676	.745
	.567	.556	.728	.654	.618	.733	.572	.425	.310	.579
	.436	.538	.666	.761	.363	.529	.493	.515	.592	.689
	.560	.560	.672	.771	.725	.732	.796	.735	.338	.263
	.493	.646	.586	.685	.556	.618	.586	.688	.646	.564
Rating	.466	.682	.768	.786	.643	.692	.634	.569	.546	.691
	.811	.659	.350	.571	.568	.503	.663	.657	.593	.479
	.837	.675	.785	.867	.726	.607	.696	.664	.731	.331
	.762	.639	.748	.714	.402	.761	.773	.722	.637	.596
	.788	.560	.774	.868	.494	.739	.763	.642	.417	.609
	.831	.737	.833	.906	.796	.806	.764	.698	.648	.800
	.680	.749	.809	.825	.690	.827	.718	.453	.653	.534
	.463	.689	.763	.856	.627	.636	.614	.682	.693	.689
	.829	.495	.751	.858	.709	.816	.744	.574	.536	.531
	.602	.730	.569	.769	.670	.706	.542	.755	.621	.710

References

DeAnda, N. Developing Childrens' Healthy Self-Concept. San Francisco: Far West Laboratory for Educational Research and Development, 1973.

Erikson, E.H. Identity and the Life Cycle: Selected Papers. Psychological Issues, 1959, 1 (Whole No. 1).

Hollingshead, A. The Two Factor Index of Social Position. (Privately Printed.) New Haven, 1957.

Joreskog, K.G. A general approach to Maximum Likelihood Factor Analysis. Paper presented at the meeting of the Psychometric Society, Madison, Wisconsin, March 29-31, 1967.

Joreskog, K.G. A general approach to confirmatory Maximum Likelihood Factor Analysis. Psychometrika, 1969, 34 (No. 2), 183-202.

Kaiser, H.F. The varimax criterion for analytic rotation in factor analysis. Psychometrika, 1958, 23, 187-200.

Kelley, H.H. Attribution in social Interaction. In E.E. Jones, D.E. Kanouse, H.H. Kelly, R.E. Nisbett, S. Valins and B. Weiner, Attribution: Perceiving the causes of behavior. Morristown, N.J.: General Learning Press, 1971.

Landry, R.G., Schilson, E. and Pardew, E.M. Self-Concept enhancement in a preschool program. Journal of Experimental Education, 1974, 42(4), 39-43.

Sears, P.S. The effect of classroom conditions on the strength of achievement motive and work output of elementary school children. Palo Alto, Calif.: Santford University. U.S. Office of Education Coop. Research Project No. 873, 1963.

Staats, A.W. Language behavior therapy: a derivative of social behaviorism. Behavior Therapy, 1972, 3, 165-192.

Torshen, K.P. The Relation of Classroom Evaluation to Students' Self-Concepts and Mental Health. Unpublished Ph.D. dissertation, University of Chicago, 1969.

White, R.W. Compentence and the psychosexual stages of development. In M. Jones (ed.). Nebraska Symposium on Motivation. Lincoln: University of Nebraska Press, 1960, Pp. 97-141.